PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	10/810,983
Filing Date:	March 26, 2004
Applicant:	Yar-Ming Wang et al.
Group Art Unit:	1795
Examiner:	Kishor Mayekar
Title:	Surface-cleaning to Remove Meal and Other Contaminants Using Hydrogen
Attorney Docket:	GP-304670 (8540R-85)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

DO NOT ENTER: /KM/

08/19/2008

AMENDMENT UNDER 37 C.F.R. § 1.111

Sir:

In response to the Office Action mailed June 24, 2008, please amend the application as follows and consider the remarks set forth below.

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A method of separating adhered metal particle matter from a surface of a conductive vehicle or vehicle part substrate comprising:

immersing the vehicle or vehicle part substrate surface having adhered metal particle matter in an electrolyte medium;

producing gaseous hydrogen by electrolyzing water of ~~an~~ the electrolyte medium in contact with said surface of said vehicle or vehicle part substrate, dislodging said adhered metal particle matter by force of said evolved hydrogen to clean said surface; ~~and~~

transporting said dislodged metal particle matter from a vicinity of said surface; and

applying a coating to said cleaned surface.

2. (original) The method of Claim 1, wherein said electrolyzing is conducted at a voltage greater than the electrolysis voltage of water.

3. (original) The method of Claim 1, wherein said dislodged matter is transported from a vicinity of said surface by flow of electrolyte via an eductor.

4. (currently amended) The method of Claim 1, wherein said transporting of dislodged metal particle matter is conducted ~~in the presence of a fluid that~~ by the electrolyte medium, which entrains said dislodged metal particle matter.

5. (cancelled)

6. (currently amended) The method of Claim 4, wherein said transporting comprises movement of at least one of said surface and said ~~fluid~~ electrolyte medium relative to one another.

7. (currently amended) The method of Claim 6, wherein said ~~fluid~~ electrolyte medium moves.

8. (original) The method of Claim 6, wherein said substrate moves.

9. (currently amended) The method of Claim 4, wherein said ~~fluid~~ electrolyte medium has a density sufficient to entrain said dislodged metal particle matter.

10. (original) The method of Claim 1, wherein said conductive substrate constitutes a cathode.

11. (original) The method of Claim 2, wherein the voltage is at least 2 volts.

12. (original) The method of Claim 2, wherein voltage is at least 5 volts.

13. (original) The method of Claim 2, wherein the voltage is up to about 20 volts.

14. (original) The method of Claim 1, wherein the electrolyte medium comprises a basic electrolyte.

15. (original) The method of Claim 1, wherein the electrolyte medium comprises an acidic electrolyte.

16. (previously presented) The method of Claim 1, wherein the electrolyte medium comprises sodium carbonate in an amount of about 20 to about 30 grams per liter of electrolyte medium.

17. (original) The method of Claim 1, wherein the pH of the electrolyte medium is in a range of about 3 to 13.

18. (original) The method of Claim 1, wherein the electrolyte medium comprises trisodium phosphate.

19. (original) The method of Claim 1, wherein said electrolyzing is at a current density of less than one amp per square decimeter (A/dm^2).

20. (original) The method of Claim 19, wherein said current density is in a range of about 0.1 to about 0.3 A/dm^2.

Claims 21-29. (cancelled)

REMARKS

Claims 1-4 and 6-20 remain pending. Claim 1 is amended to specify that the substrate is that of a vehicle or vehicle part as disclosed at least in paragraphs 4, 10, 18, and 20 which is immersed as disclosed at least in paragraphs 4and 18 and shown in Fig. 2, and a further step of applying a coating as disclosed at least in paragraphs 4, 18, 19, , and 23 and shown in Fig. 1. Claim 5 is cancelled. Claims 6-7 and 9 have been amended to conform to amended claim 1.

Rejection Under 35 U.S.C. § 102(b) over Gernon et al.

Claims 1, 2, 10, and 15 have been rejected as anticipated by Gernon et al., U.S. Patent No. 6,187,169 B1. Applicants respectfully traverse the rejection with respect to the amended claims.

The claims are patentable over the Gernon patent because the Gernon patent does not disclose at least the claimed features of immersing the vehicle or vehicle part substrate surface having adhered metal particle matter in an electrolyte medium and applying a coating to the cleaned surface. Instead, the Gernon patent at most teaches immersing a stainless steel electrode that has no particulate metal matter adhered—the passage in column 9 deals with metal deposited after immersion. No coating step of a cleaned surface is described.

Applicants believe the claims are not anticipated by the Gernon patent for these reasons. Reconsideration of the claims and withdrawal of the rejection are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) over Gernon et al.

Claims 1-13, 17. 19, and 20 have been rejected as unpatentable over Gernon et al., U.S. Patent No. 6,187,169 B1. Applicants respectfully traverse the rejection with respect to the

amended claims.

As discussed above, the Gernon patent does not teach aspects of underlying independent claim, and thus of these dependent claims. Nothing in the Gernon patent, which concerns recovery of organosulfonic acids from salts, would suggest the subject matter of the present claims, and there would be no reason to discard the purpose of the Gernon patent to turn instead to a method of cleaning and coating a substrate that has metal contaminants.

Reconsideration of the claims and withdrawal of the rejection are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) over Polan et al. or Polan et al with Gernon et al.

Claims 1, 2, 4-10, 14, 15, and 17-20 have been rejected as unpatentable over Polan et al., U.S. Patent No. 4,568,431 alone or with the Gernon patent. Applicants respectfully traverse the rejection with respect to the amended claims.

First, the Gernon patent is nonanalogous art, as it is not in the field of coating metal substrates and is not directed to the problem Applicants sought to solve of cleaning metal contaminants from a substrate prior to cleaning.

Even were the Gernon reference analogous art, however, the combined references still fail to teach or suggest a method of cleaning adhered metal particles from a surface of a conductive vehicle or vehicle part substrate by immersing it in an electrolyte medium. The combined references further fail to teach or suggest then coating the claimed vehicle or vehicle part substrate. The Polan patent does not concern removing adhered metal particle matter, while the passage in the Gernon patent on which the Office Action relies suggests at most using a stainless steel anode so that metal deposited from an electrolyte will not adhere in the first place.

Further, the Polan patent metal foil would not appear to have metal particle matter on its

surface. Polan describes a process of electrolytic cleaning to remove "residual grease, oil and other contaminants" in column 5. The electrolytic cleaning technique is said to "enhance the solvent action of the caustic [cleaning] solution" by the agitation produced by the hydrogen bubbles. Col. 5, lines 14-18. The Polan patent again equates cleaning with degreasing at the end of that paragraph. *Id.* at line 23. Again, in column 4, lines 60-61 and again at line 68, Polan teaches that it is bulk oil and grease that is removed in the cleaning step. In addition, the only source Polan mentions for its particulate filtered from its replenishment system is "from the atmosphere." Col. 1, line 23; col. 12, line 50; col. 14, lines 5-6. Nor do the Polan and Gernon patents mention or suggest in any way immersing and cleaning a vehicle or vehicle part with adhered metal particle matter.

Finally, the combined references do not suggest coating after cleaning.

For each of these reasons, the present claims are patentable over the cited art. Therefore, reconsideration of the claims and withdrawal of the rejection are respectfully requested.

Rejections Under 35 U.S.C. § 103(a) over Polan et al. alone or with Gernon et al. in View of Lauke and in View of Sallo et al. or Smith

Claim 3 has been rejected as unpatentable over Polan et al., U.S. Patent No. 4,568,431 alone or with Gernon et al., U.S. Patent No. 6,187,169 B1 in view of Lauke, U.S. Patent No. 4.568,438.

Claims 11-13 and 16 have been rejected as unpatentable over Polan et al., U.S. Patent No. 4,568,431 alone or with Gernon et al., U.S. Patent No. 6,187,169 B1 in view of Sallo et al., U.S. Patent No. 3,668,090 or Smith, U.S. Patent No. 4,270,986.

Applicants respectfully traverse these rejections and request reconsideration of the

claims.

The Lauke patent is cited as teaching an eductor. The Lauke patent does not, however, teach or suggest removing metal particle matter from a conductive substrate, and so fails to remedy or account for the deficiencies of the combination of the Polan and Gernon patents.

The Sallo and Smith patents, like the Lauke patent, do not teach or suggest removing metal particle matter from a conductive substrate, and so fails to remedy or account for the deficiencies of the combination of the Polan and Gernon patents.

Applicants, accordingly, respectfully request withdrawal of the rejections and reconsideration of the claims.

Conclusion

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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August 14, 2008
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